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Amendments to the Claims:

This listing of claims will replace all prior versions of the claims in this application:

Listing of Claims:

Claim 1 (original): A method for determining the volume of fluid in the peritoneal cavity of a subject comprising:

- (a) placing measuring electrodes M_{LL} and M_{RL} on the loins of the subject, M_{LL} being placed on the left loin and M_{RL} being placed on the right loin, M_{LL} and M_{RL} defining a loin plane;
- (b) placing measuring electrodes M_{LB} and M_{RB} on the buttocks of the subject, M_{LB} being placed on the left buttock and M_{RB} being placed on the right buttock, M_{LB} and M_{RB} defining a buttock plane;
- (c) placing upper current-providing electrodes I_{LU} and I_{RU} on the subject, I_{LU} being outboard of measuring electrode M_{LL} and I_{RU} being outboard of measuring electrode M_{RL} ;
- (d) placing lower current-providing electrodes I_{RL} and I_{LL} on the subject, I_{RL} being outboard of measuring electrode M_{RB} and I_{LL} being outboard of measuring electrode M_{LB} ;
- (e) connecting upper current-providing electrode I_{LU} to upper current-providing electrode I_{RU} ;
- (f) connecting lower current-providing electrode I_{LL} to lower current-providing electrode I_{RL} ;
- (g) applying current I between the connected upper current-providing electrodes and the connected lower current-providing electrodes;
- (h) measuring the voltage Φ_L between M_{LL} and M_{LB} while current I is applied;

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- (i) measuring the voltage Φ_R between M_{RL} and M_{RB} while current I is applied; and
- (j) determining the volume V of fluid in the peritoneal cavity based on the equation:

$$V = (K_P/\sigma) \cdot (L_P^2/R)$$

where:

- (1) K_P is a subject-specific calibration constant;
- (2) σ is the conductivity of the fluid in the peritoneal cavity;
- (3) L_P is the distance between the loin plane and the buttock plane; and
- (4) R is the average of R_L and R_R , where

$$R_L = \Phi_L/I, \text{ and}$$

$$R_R = \Phi_R/I.$$

Claim 2 (original): The method of Claim 1 wherein K_P is determined by:

- (i) performing steps (g), (h), and (i) before the introduction of a predetermined volume V_C of dialysis fluid into the subject's peritoneal cavity to obtain Φ_{LB} and Φ_{RB} , said dialysis fluid having a conductivity σ_C ;
- (ii) performing steps (g), (h), and (i) after the introduction of a predetermined volume V_C of dialysis fluid into the subject's peritoneal cavity to obtain Φ_{LA} and Φ_{RA} ; and
- (iii) determining K_P from the equation:

$$K_P = (\sigma_C) \cdot (V_C/L_P^2) \cdot (R_B R_A)/(R_B - R_A)$$

where

$$R_B = (\Phi_{LB} + \Phi_{RB})/(2I), \text{ and}$$

$$R_A = (\Phi_{LA} + \Phi_{RA})/(2I).$$

Claim 3 (original): The method of Claim 2 where V_C is at least one liter.

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Claim 4 (original): The method of Claim 1 wherein K_P is determined by:

- (i) introducing dialysis fluid into the subject's peritoneal cavity;
- (ii) performing steps (g), (h), and (i) to obtain Φ_{LB} and Φ_{RB} ;
- (iii) removing fluid from the subject's peritoneal cavity;
- (iv) performing steps (g), (h), and (i) to obtain Φ_{LA} and Φ_{RA} ; and
- (v) determining K_P from the equation:

$$K_P = (\sigma_C) \cdot (V_C / L_P)^2 \cdot (R_B R_A) / (R_A - R_B)$$

where

$$R_B = (\Phi_{LB} + \Phi_{RB}) / (2I),$$

$$R_A = (\Phi_{LA} + \Phi_{RA}) / (2I), \text{ and}$$

V_C and σ_C are, respectively, the volume and conductivity of the fluid removed in step (iii).

Claim 5 (original): The method of Claim 4 where V_C is at least one liter.

Claim 6 (original): The method of Claim 1 wherein the current I is alternating current having a frequency in the range from about 5 kilohertz to about 500 kilohertz.

Claim 7 (original): The method of Claim 6 wherein the current I has a frequency of about 5 kilohertz.

Claim 8 (original): The method of Claim 1 wherein the upper current-providing electrodes are placed on the subject's hands and the lower current-providing electrodes are placed on the subject's feet.

Claim 9 (original): The method of Claim 1 wherein the upper current-providing electrodes are placed on the subject's trunk and the lower current-providing electrodes are placed on the subject's thighs.

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Claim 10 (original): The method of Claim 1 wherein the upper current-providing electrodes and the measuring electrodes M_{LL} and M_{RL} are carried by a common support which is placed on the subject's trunk.

Claim 11 (original): The method of Claim 1 wherein the lower current-providing electrode I_{LL} and the measuring electrode M_{LB} are carried by a first common support which is placed at least in part on the subject's left leg and the lower current-providing electrode I_{RL} and the measuring electrode M_{RB} are carried by a second common support which is placed at least in part on the subject's right leg.

Claim 12 (previously presented): A method of controlling a peritoneal dialysis procedure comprising:

- (A) continuously flowing dialysis fluid through a subject's peritoneal cavity;
- (B) determining the volume of fluid in the peritoneal cavity while step (A) is being performed by a bioimpedance measurement directed at the peritoneal cavity; and
- (C) controlling step (A) based on the volume of fluid in the peritoneal cavity determined in step (B).

Claim 13 (original): The method of Claim 12 wherein step (B) is performed by:

- (a) placing measuring electrodes M_{LL} and M_{RL} on the loins of the subject, M_{LL} being placed on the left loin and M_{RL} being placed on the right loin, M_{LL} and M_{RL} defining a loin plane;
- (b) placing measuring electrodes M_{LB} and M_{RB} on the buttocks of the subject, M_{LB} being placed on the left buttock and M_{RB} being placed on the right buttock, M_{LB} and M_{RB} defining a buttock plane;
- (c) placing upper current-providing electrodes I_{LU} and I_{RU} on the subject, I_{LU} being outboard of measuring electrode M_{LL} and I_{RU} being outboard of measuring electrode M_{RL} ;

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- (d) placing lower current-providing electrodes I_{RL} and I_{LL} on the subject, I_{RL} being outboard of measuring electrode M_{RB} and I_{LL} being outboard of measuring electrode M_{LB} ;
- (e) connecting upper current-providing electrode I_{LU} to upper current-providing electrode I_{RU} ;
- (f) connecting lower current-providing electrode I_{LL} to lower current-providing electrode I_{RL} ;
- (g) applying current I between the connected upper current-providing electrodes and the connected lower current-providing electrodes;
- (h) measuring the voltage Φ_L between M_{LL} and M_{LB} while current I is applied;
- (i) measuring the voltage Φ_R between M_{RL} and M_{RB} while current I is applied; and
- (j) determining the volume V of fluid in the peritoneal cavity based on the equation:

$$V = (K_P/\sigma) \cdot (L_P^2/R)$$

where:

- (1) K_P is a subject specific calibration constant;
- (2) σ is the conductivity of the fluid in the peritoneal cavity;
- (3) L_P is the distance between the loin plane and the buttock plane; and
- (4) R is the average of R_L and R_R , where

$$R_L = \Phi_L/I, \text{ and}$$

$$R_R = \Phi_R/I.$$

Claim 14 (original): The method of Claim 12 where the rate of flow of dialysis fluid into, out of, or both into and out of the peritoneal cavity is controlled in step (C).

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Claim 15 (original): The method of Claim 12 where the composition of the dialysis fluid is controlled in step (C).

Claim 16 (original): The method of Claim 12 including the additional step of determining the conductivity of dialysis fluid removed from the subject while step (A) is being performed.

Claim 17 (previously presented): The method of Claim 12 wherein in step (A), the continuous flowing of dialysis fluid through the subject's peritoneal cavity is performed for a period of at least three hours and step (B) is performed at least at regular intervals throughout said period.

Claim 18 (original): The method of Claim 17 wherein step (B) is performed substantially continuously throughout said period.

Claim 19 (previously presented): The method of Claim 12 wherein in step (A), the continuous flowing of dialysis fluid through the subject's peritoneal cavity is performed for a period of at least six hours and step (B) is performed at least at regular intervals throughout said period.

Claim 20 (original): The method of Claim 19 wherein step (B) is performed substantially continuously throughout said period.

Claim 21 (original): Apparatus for determining the volume of fluid in the peritoneal cavity of a subject comprising:

(a) measuring electrodes M_{LL} and M_{RL} for placement on the loins of the subject, M_{LL} to be placed on the left loin and M_{RL} to be placed on the right loin such that, when so placed, M_{LL} and M_{RL} define a loin plane;

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(b) measuring electrodes M_{LB} and M_{RB} for placement on the buttocks of the subject, M_{LB} to be placed on the left buttock and M_{RB} to be placed on the right buttock such that, when so placed, M_{LB} and M_{RB} define a buttock plane;

(c) upper current-providing electrodes I_{LU} and I_{RU} for placement on the subject;

(d) lower current-providing electrodes I_{RL} and I_{LL} for placement on the subject;

(e) means for connecting upper current-providing electrode I_{LU} to upper current-providing electrode I_{RU} ;

(f) means for connecting lower current-providing electrode I_{LL} to lower current-providing electrode I_{RL} ;

(g) means for applying a current I between the connected upper current-providing electrodes and the connected lower current-providing electrodes;

(h) means for measuring the voltage Φ_L between M_{LL} and M_{LB} while current I is applied;

(i) means for measuring the voltage Φ_R between M_{RL} and M_{RB} while current I is applied; and

(j) means for determining the volume V of fluid in the peritoneal cavity based on the equation:

$$V = (K_p/\sigma) \cdot (L_p^2/R)$$

where:

- (1) K_p is a subject-specific calibration constant;
- (2) σ is the conductivity of the fluid in the peritoneal cavity;
- (3) L_p is the distance between the loin plane and the buttock plane; and
- (4) R is the average of R_L and R_R , where

$$R_L = \Phi_L/I, \text{ and}$$

$$R_R = \Phi_R/I.$$

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Claim 22 (original): The apparatus of Claim 21 further comprising means for determining K_P , said means comprising:

(i) means for determining the voltage Φ_{LB} between M_{LL} and M_{LB} and the voltage Φ_{RB} between M_{RL} and M_{RB} while current I is applied, said determination being made before the introduction of a predetermined volume V_C of dialysis fluid into the subject's peritoneal cavity, said dialysis fluid having a conductivity σ_C ;

(ii) means for determining the voltage Φ_{LA} between M_{LL} and M_{LB} and the voltage Φ_{RA} between M_{RL} and M_{RB} while current I is applied, said determination being made after the introduction of a predetermined volume V_C of dialysis fluid into the subject's peritoneal cavity; and

(iii) means for determining K_P from the equation:

$$K_P = (\sigma_C) \cdot (V_C / L_P)^2 \cdot (R_B R_A) / (R_B - R_A)$$

where

$$R_B = (\Phi_{LB} + \Phi_{RB}) / (2I), \text{ and}$$

$$R_A = (\Phi_{LA} + \Phi_{RA}) / (2I).$$

Claim 23 (original): The apparatus of Claim 21 further comprising means for determining K_P , said means comprising:

(i) means for introducing dialysis fluid into the subject's peritoneal cavity;

(ii) means for determining the voltage Φ_{LB} between M_{LL} and M_{LB} and the voltage Φ_{RB} between M_{RL} and M_{RB} while current I is applied, said determination being made before removal of fluid from the subject's peritoneal cavity;

(iii) means for removing fluid from the subject's peritoneal cavity;

(iv) means for measuring the volume V_C of fluid removed from the subject's peritoneal cavity;

(v) means for determining the voltage Φ_{LA} between M_{LL} and M_{LB} and the voltage Φ_{RA} between M_{RL} and M_{RB} while current I is applied, said determination being

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made after the removal of the volume V_C of fluid from the subject's peritoneal cavity;
and

(vi) means for determining K_P from the equation:

$$K_P = (\sigma_C) \cdot (V_C / L_P^2) \cdot (R_B R_A) / (R_A - R_B)$$

where

$$R_B = (\Phi_{LB} + \Phi_{RB}) / (2I),$$

$$R_A = (\Phi_{LA} + \Phi_{RA}) / (2I), \text{ and}$$

σ_C is the conductivity of the fluid removed from the subject's
peritoneal cavity.

Claim 24 (original): The apparatus of Claim 21 wherein the current I is alternating current having a frequency in the range from about 5 kilohertz to about 500 kilohertz.

Claim 25 (original): The apparatus of Claim 24 wherein the current I has a frequency of about 5 kilohertz.

Claim 26 (original): The apparatus of Claim 21 further comprising a support for carrying the upper current-providing electrodes and the measuring electrodes M_{LL} and M_{RL} .

Claim 27 (original): The apparatus of Claim 21 further comprising a first support for carrying the lower current-providing electrode I_{LL} and the measuring electrode M_{LB} and a second support for carrying the lower current-providing electrode I_{RL} and the measuring electrode M_{RB} .

Claim 28 (original): Apparatus for performing a peritoneal dialysis procedure comprising:

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- (A) first means for continuously flowing dialysis fluid through a subject's peritoneal cavity, said flowing of dialysis fluid being capable of causing the accumulation of ultrafiltrate from the subject in the peritoneal cavity;
- (B) second means for determining the volume of fluid in the peritoneal cavity while dialysis fluid is flowed through the subject's peritoneal cavity, said second means comprising means for performing a bioimpedance measurement directed at the peritoneal cavity; and
- (C) third means for controlling the first means based on the volume of fluid in the peritoneal cavity determined by the second means.

Claim 29 (original): The apparatus of Claim 28 wherein the means for performing a bioimpedance measurement directed at the peritoneal cavity comprises:

- (a) measuring electrodes M_{LL} and M_{RL} for placement on the loins of the subject, M_{LL} to be placed on the left loin and M_{RL} to be placed on the right loin such that, when so placed, M_{LL} and M_{RL} define a loin plane;
- (b) measuring electrodes M_{LB} and M_{RB} for placement on the buttocks of the subject, M_{LB} to be placed on the left buttock and M_{RB} to be placed on the right buttock such that, when so placed, M_{LB} and M_{RB} define a buttock plane;
- (c) upper current-providing electrodes I_{LU} and I_{RU} for placement on the subject;
- (d) lower current-providing electrodes I_{RL} and I_{LL} for placement on the subject;
- (e) means for connecting upper current-providing electrode I_{LU} to upper current-providing electrode I_{RU} ;
- (f) means for connecting lower current-providing electrode I_{LL} to lower current-providing electrode I_{RL} ;
- (g) means for applying a current I between the connected upper current-providing electrodes and the connected lower current-providing electrodes;

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(h) means for measuring the voltage Φ_L between M_{LL} and M_{LB} while current I is applied;

(i) means for measuring the voltage Φ_R between M_{RL} and M_{RB} while current I is applied; and

(j) means for determining the volume V of fluid in the peritoneal cavity based on the equation:

$$V = (K_P/\sigma) \cdot (L_P^2/R)$$

where:

- (1) K_P is a subject-specific calibration constant;
- (2) σ is the conductivity of the fluid in the peritoneal cavity;
- (3) L_P is the distance between the loin plane and the buttock plane; and
- (4) R is the average of R_L and R_R , where

$$R_L = \Phi_L/I, \text{ and}$$

$$R_R = \Phi_R/I.$$

Claim 30 (original): The apparatus of Claim 28 wherein the third means controls the ultrafiltration rate of the first means.

Claim 31 (original): The apparatus of Claim 28 wherein the third means controls the rate at which the first means flows dialysis fluid through the subject's peritoneal cavity.

Claim 32 (original): The apparatus of Claim 28 wherein the third means controls the composition of the dialysis fluid which the first means flows through the subject's peritoneal cavity.

Claim 33 (original): The apparatus of Claim 28 wherein the third means includes means for determining the conductivity of the dialysis fluid removed from the subject by the first means.

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Claim 34 (currently amended): An article of manufacture comprising a computer usable medium having computer readable code means embodied therein for:

(a) determining the volume V of fluid in the peritoneal cavity of a subject by performing step (j) of Claim 1, based on the equation:

$$V = (K_p/\sigma) \cdot (L_p^2/R)$$

where:

- (1) K_p is a subject-specific calibration constant;
- (2) σ is the conductivity of the fluid in the peritoneal cavity;
- (3) L_p is the distance between a loin plane and a buttock plane of the subject,

the loin plane being established by the locations of measuring electrodes M_{LL} and M_{RL} placed on the subject's left and right loins, respectively, and the buttock plane being established by measuring electrodes M_{LB} and M_{RB} placed on the subject's left and right buttocks, respectively; and

- (4) R is the average of R_L and R_R , where

- (i) $R_L = \Phi_L/I$

- (ii) $R_R = \Phi_R/I$, and

- (iii) I is an applied current between connected upper current-providing electrodes I_{LU} and I_{RU} and connected lower current-providing electrodes I_{RL} and I_{LL} placed on the subject with I_{LU} being outboard of measuring electrode M_{LL} , I_{RU} being outboard of measuring electrode M_{RL} , I_{RL} being outboard of measuring electrode M_{RB} and I_{LL} being outboard of measuring electrode M_{LB} , and

- (iv) Φ_L and Φ_R are measured voltages between M_{LL} and M_{LB} and between M_{RL} and M_{RB} , respectively, while current I is applied; and

(b) displaying the value of the calculated volume V to the subject and/or to a care provider and/or controlling the flow of dialysis fluid through the subject's peritoneal cavity using the calculated volume V .

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Claim 35 (currently amended): An article of manufacture comprising a computer usable medium having computer readable code means embodied therein for:

(a) determining the volume of fluid in the peritoneal cavity of a subject by performing step (iii) of Claim 2, determining a subject-specific calibration constant K_P from the equation:

$$K_P = (\sigma_C) \cdot (V_C / L_P^2) \cdot (R_B R_A) / (R_B - R_A)$$

where

(i) $R_B = (\Phi_{LB} + \Phi_{RB}) / (2I)$;

(ii) $R_A = (\Phi_{LA} + \Phi_{RA}) / (2I)$;

(iii) V_C and σ_C are, respectively, the volume and conductivity of a predetermined volume of dialysis fluid;

(iv) L_P is the distance between a loin plane and a buttock plane of the subject, the loin plane being established by the locations of measuring electrodes M_{LL} and M_{RL} placed on the subject's left and right loins, respectively, and the buttock plane being established by measuring electrodes M_{LB} and M_{RB} placed on the subject's left and right buttocks, respectively;

(v) I is an applied current between connected upper current-providing electrodes I_{LU} and I_{RU} and connected lower current-providing electrodes I_{RL} and I_{LL} placed on the subject with I_{LU} being outboard of measuring electrode M_{LL} , I_{RU} being outboard of measuring electrode M_{RL} , I_{RL} being outboard of measuring electrode M_{RB} and I_{LL} being outboard of measuring electrode M_{LB} .

(vi) Φ_{LB} and Φ_{RB} are measured voltages between M_{LL} and M_{LB} and between M_{RL} and M_{RB} , respectively, obtained before introduction of the predetermined volume of dialysis fluid into the subject's peritoneal cavity and while current I is applied; and

(vii) Φ_{LA} and Φ_{RA} are measured voltages between M_{LL} and M_{LB} and between M_{RL} and M_{RB} , respectively, obtained after introduction of the predetermined

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volume of dialysis fluid into the subject's peritoneal cavity and while current I is applied; and

(b) displaying the value of the calculated subject-specific calibration constant K_P to the subject and/or to a care provider and/or controlling the flow of dialysis fluid through the subject's peritoneal cavity using the calculated subject-specific calibration constant K_P .

Claim 36 (currently amended): An article of manufacture comprising a computer usable medium having computer readable code means embodied therein for:

(a) determining the volume of fluid in the peritoneal cavity of a subject by performing step (v) of Claim 4; determining a subject-specific calibration constant K_P from the equation:

$$K_P = (\sigma_C) \cdot (V_C / L_P^2) \cdot (R_B R_A) / (R_B - R_A)$$

where

(i) $R_B = (\Phi_{LB} + \Phi_{RB}) / (2I)$;

(ii) $R_A = (\Phi_{LA} + \Phi_{RA}) / (2I)$;

(iii) L_P is the distance between a loin plane and a buttock plane of the subject, the loin plane being established by the locations of measuring electrodes M_{LL} and M_{RL} placed on the subject's left and right loins, respectively, and the buttock plane being established by measuring electrodes M_{LB} and M_{RB} placed on the subject's left and right buttocks, respectively;

(iv) I is an applied current between connected upper current-providing electrodes I_{LU} and I_{RU} and connected lower current-providing electrodes I_{RL} and I_{LL} placed on the subject with I_{LU} being outboard of measuring electrode M_{LL} , I_{RU} being outboard of measuring electrode M_{RL} , I_{RL} being outboard of measuring electrode M_{RB} and I_{LL} being outboard of measuring electrode M_{LB} .

(v) Φ_{LB} and Φ_{RB} are measured voltages between M_{LL} and M_{LB} and between M_{RL} and M_{RB} , respectively, obtained after introduction of dialysis fluid into the subject's peritoneal cavity and while current I is applied;

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(vi) Φ_{LA} and Φ_{RA} are measured voltages between M_{LL} and M_{LB} and between M_{RL} and M_{RB} , respectively, obtained after removal of fluid from the subject's peritoneal cavity and while current I is applied; and

(vii) V_C and σ_C are, respectively, the volume and conductivity of the fluid removed from the subject's peritoneal cavity; and

(b) displaying the value of the calculated subject-specific calibration constant K_P to the subject and/or to a care provider and/or controlling the flow of dialysis fluid through the subject's peritoneal cavity using the calculated subject-specific calibration constant K_P .

Claim 37 (currently amended): Apparatus comprising a computer which has been programmed to:

(a) determine the volume V of fluid in the peritoneal cavity of a subject by performing step (j) of Claim 1, based on the equation:

$$V = (K_P/\sigma) \cdot (L_P^2/R)$$

where:

(1) K_P is a subject-specific calibration constant;

(2) σ is the conductivity of the fluid in the peritoneal cavity;

(3) L_P is the distance between a loin plane and a buttock plane of the subject, the loin plane being established by the locations of measuring electrodes M_{LL} and M_{RL} placed on the subject's left and right loins, respectively, and the buttock plane being established by measuring electrodes M_{LB} and M_{RB} placed on the subject's left and right buttocks, respectively; and

(4) R is the average of R_L and R_R , where

(i) $R_L = \Phi_L/I$,

(ii) $R_R = \Phi_R/I$, and

(iii) I is an applied current between connected upper current-providing electrodes I_{LU} and I_{RU} and connected lower current-providing electrodes I_{RL} and I_{LL} .

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placed on the subject with I_{LU} being outboard of measuring electrode M_{LL} , I_{RU} being outboard of measuring electrode M_{RL} , I_{RL} being outboard of measuring electrode M_{RB} and I_{LL} being outboard of measuring electrode M_{LB} , and

(iv) Φ_L and Φ_R are measured voltages between M_{LL} and M_{LB} and between M_{RL} and M_{RB} , respectively, while current I is applied; and

(b) display the value of the calculated volume V to the subject and/or to a care provider and/or control the flow of dialysis fluid through the subject's peritoneal cavity using the calculated volume V .

Claim 38 (currently amended): Apparatus comprising a computer which has been programmed to:

(a) determine the volume of fluid in the peritoneal cavity of a subject by performing step (iii) of Claim 2; determining a subject-specific calibration constant K_P from the equation:

$$K_P = (\sigma_C) \cdot (V_C / L_P^2) \cdot (R_B R_A) / (R_B - R_A)$$

where

(i) $R_B = (\Phi_{LB} + \Phi_{RB}) / (2I)$;

(ii) $R_A = (\Phi_{LA} + \Phi_{RA}) / (2I)$;

(iii) V_C and σ_C are, respectively, the volume and conductivity of a predetermined volume of dialysis fluid;

(iv) L_P is the distance between a loin plane and a buttock plane of the subject, the loin plane being established by the locations of measuring electrodes M_{LL} and M_{RL} placed on the subject's left and right loins, respectively, and the buttock plane being established by measuring electrodes M_{LB} and M_{RB} placed on the subject's left and right buttocks, respectively;

(v) I is an applied current between connected upper current-providing electrodes I_{LU} and I_{RU} and connected lower current-providing electrodes I_{RL} and I_{LL} placed on the subject with I_{LU} being outboard of measuring electrode M_{LL} , I_{RU} being

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outboard of measuring electrode M_{RL} , I_{RL} being outboard of measuring electrode M_{RB} and I_{LL} being outboard of measuring electrode M_{LB} ,

(vi) Φ_{LB} and Φ_{RB} are measured voltages between M_{LL} and M_{LB} and between M_{RL} and M_{RB} , respectively, obtained before introduction of the predetermined volume of dialysis fluid into the subject's peritoneal cavity and while current I is applied; and

(vii) Φ_{LA} and Φ_{RA} are measured voltages between M_{LL} and M_{LB} and between M_{RL} and M_{RB} , respectively, obtained after introduction of the predetermined volume of dialysis fluid into the subject's peritoneal cavity and while current I is applied; and

(b) display the value of the calculated subject-specific calibration constant K_P to the subject and/or to a care provider and/or control the flow of dialysis fluid through the subject's peritoneal cavity using the calculated subject-specific calibration constant K_P .

Claim 39 (currently amended): Apparatus comprising a computer which has been programmed to:

(a) determine the volume of fluid in the peritoneal cavity of a subject by performing step (v) of Claim 4, determining a subject-specific calibration constant K_P from the equation:

$$K_P = (\sigma_C) \cdot (V_C / L_P^2) \cdot (R_B R_A) / (R_B - R_A)$$

where

(i) $R_B = (\Phi_{LB} + \Phi_{RB}) / (2I)$;

(ii) $R_A = (\Phi_{LA} + \Phi_{RA}) / (2I)$;

(iii) L_P is the distance between a loin plane and a buttock plane of the subject, the loin plane being established by the locations of measuring electrodes M_{LL} and M_{RL} placed on the subject's left and right loins, respectively, and the buttock plane being established by measuring electrodes M_{LB} and M_{RB} placed on the subject's left and right buttocks, respectively;

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(iv) I is an applied current between connected upper current-providing electrodes I_{LU} and I_{RU} and connected lower current-providing electrodes I_{RL} and I_{LL} placed on the subject with I_{LU} being outboard of measuring electrode M_{LL} , I_{RU} being outboard of measuring electrode M_{RL} , I_{RL} being outboard of measuring electrode M_{RB} and I_{LL} being outboard of measuring electrode M_{LB} .

(v) Φ_{LB} and Φ_{RB} are measured voltages between M_{LL} and M_{LB} and between M_{RL} and M_{RB} , respectively, obtained after introduction of dialysis fluid into the subject's peritoneal cavity and while current I is applied;

(vi) Φ_{LA} and Φ_{RA} are measured voltages between M_{LL} and M_{LB} and between M_{RL} and M_{RB} , respectively, obtained after removal of fluid from the subject's peritoneal cavity and while current I is applied; and

(vii) V_C and σ_C are, respectively, the volume and conductivity of the fluid removed from the subject's peritoneal cavity; and

(b) display the value of the calculated subject-specific calibration constant K_P to the subject and/or to a care provider and/or control the flow of dialysis fluid through the subject's peritoneal cavity using the calculated subject-specific calibration constant K_P .

Claim 40 (previously presented): The method of Claim 12 wherein in step (B), the bioimpedance measurement employs measuring electrodes located in the subject's loin and buttock regions.